The 2010 Hot Water Forum: Water Heating, Distribution, and Use Efficiency

Consumer Satisfaction and Laboratory Test Results of New Showerhead Standards and Labels

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2D: Cedar Lake: Showerhead Standards
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Introduction

- Showering uses 20% of total indoor water or 3.8 M gal/day
- 1992 Energy Policy Act requires max. 2.5 gpm @ 80 psig.
- Studies show 66% of consumers want more flow and force.

CEC PIER Project

- Worked with ASME/CSA Joint Harmonization Task Force on new water efficient showerhead specification.
- JHTF, EPA, and ERG worked on new test protocols and WaterSense® specification including force, coverage, flow and range of flowing pressures.
- ERG conducted surveys of 22 “WaterSense® ERG” models and JHTF performed round-robin lab tests.
- RMA conducted additional surveys and lab tests of 22 WaterSense®/ERG and 51 CEC PIER models.

Manufacturer Market Survey

- Market survey included 25 manufacturers who sell 80-90% of showerheads in the US.
- 58% reported 47% of total sales are water saving showerheads.
- 83% sell 5 efficient showerhead models and average cost is 26% less than conventional models.
- 96% of manufacturers support WaterSense®.

WaterSense®/ERG and CEC Pier Sample

- More than 100 showerheads were evaluated and 67 unique models are included in the study.
- WaterSense®/ERG sample includes 13 efficient and 9 standard models rated at 0.7 to 2.5 gpm with 12 poor performing, 5 unknowns, and 5 successful models based on utility programs and hotels.
- CEC PIER sample includes 43 efficient and 30 standard models rated at 0.55 to 2.5 gpm with 41 fixed and 10 handheld showerheads.

Consumer Satisfaction Questions

- Q1 - Temperature (1=Excellent, 3=Poor) ___ (1 to 3)
- Q2 - Force (1=excellent, 3=too soft or too hard)? ___ (1 to 3)
- Q3 - Coverage (1=Excellent, 3=Poor)? ___ (1 to 3)
- Q4 - Rinsing Action (1=Excellent, 3=Poor) ___ (1 to 3)
- Q5 - Purchase showerhead (No Buy, Buy)? ___ (0 or 1)
- Q6 - Noise (1=Quiet, 3=Loud)? ___ (1 to 3) CEC
- Q7 - Rinse time to remove conditioner? ___ (seconds) CEC

WaterSense® Flow Rate Criteria Results

Laboratory or Survey Sample	Failed Maximum Exceeds Rated Flow	Failed 60% Flow @ 20 psig	Failed 75% Flow @ 45 and 80 psig	Failed Consumer Satisfaction (% No Buy)
CSA WaterSense® ERG	68%	59%	73%	64%
IAPMO WaterSense® ERG	73%	45%	68%	64%
Alsons WaterSense® ERG	68%	59%	68%	64%
RMA WaterSense® ERG	50%	59%	73%	59%
RMA CEC PIER Fixed	41%	80%	85%	54%
RMA CEC PIER Hand Held	40%	80%	80%	10%

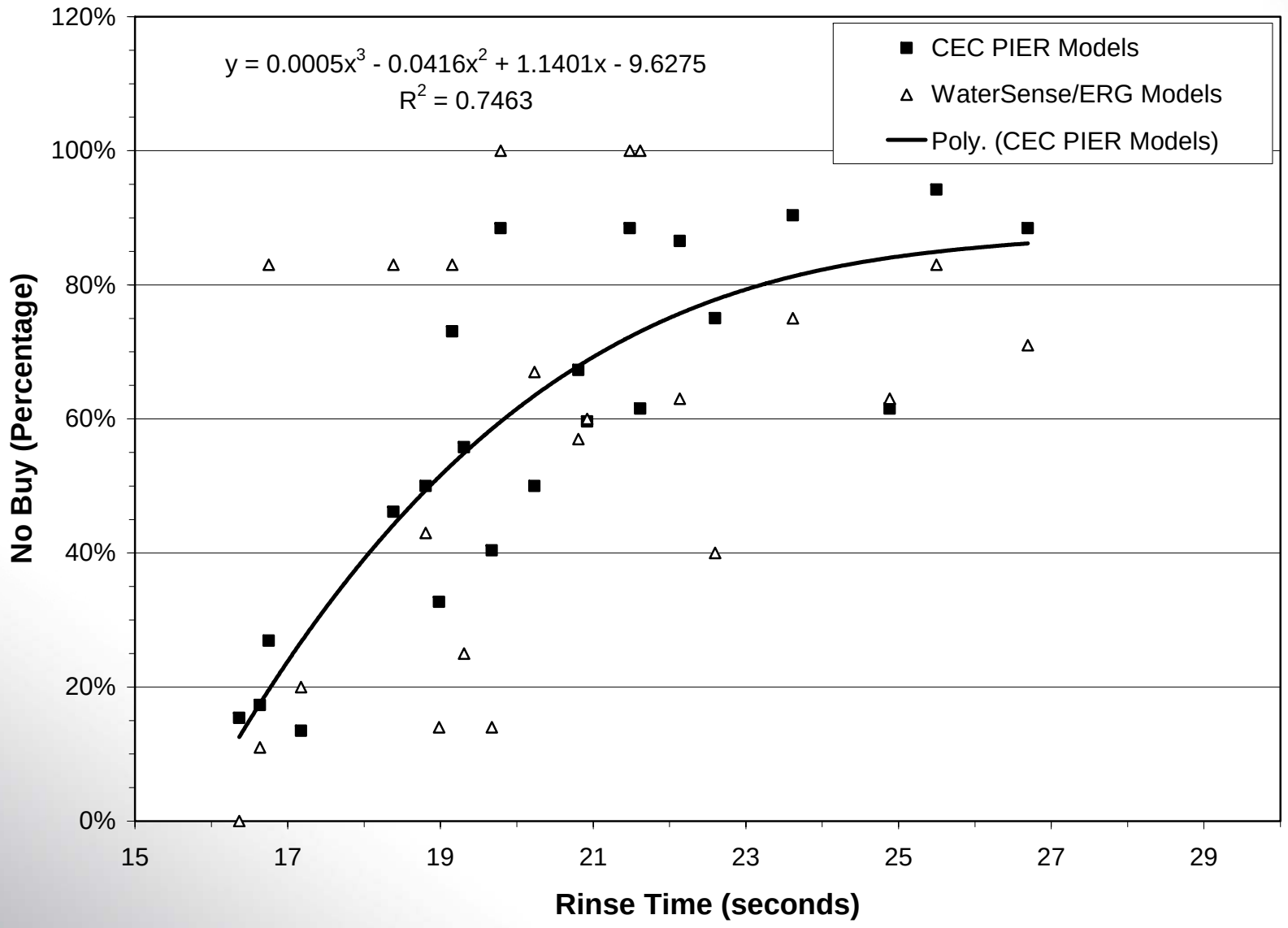
WaterSense® Force Criteria Results

Laboratory or Survey Sample	Failed 2.0 oz. Force @ 20 psig	Failed 2.3 oz. Force @ 20 psig	Failed 2.6 oz. Force @ 20 psig	Failed Consumer Satisfaction Force
CSA WaterSense® ERG	5%	9%	23%	36%
IAPMO WaterSense® ERG	9%	18%	23%	36%
Alsons WaterSense® ERG	23%	41%	68%	36%
RMA WaterSense® ERG	23%	45%	55%	36%
RMA CEC PIER Fixed	10%	17%	27%	32%
RMA CEC PIER Hand Held	10%	20%	40%	0%

WaterSense® Coverage Criteria Results

Laboratory or Survey Sample	Failed WaterSense Coverage Criteria Rings 2”+4” < 75% Rings 2”+4”+6” > 25%	Failed Consumer Satisfaction Coverage
CSA WaterSense® ERG	18%	41%
IAPMO WaterSense® ERG	18%	41%
Alsons WaterSense® ERG	18%	41%
RMA WaterSense® ERG	9%	27%
RMA CEC PIER Fixed	10%	22%
RMA CEC PIER Hand Held	10%	0%

No-Buy Percentage versus Rinse Time



Conclusions

- Correlation between lab tests and consumer survey results are 64 to 77% of showerheads failed flow rate and 59 to 64% of same models received “no-buy” rating.
- Study recommends California not adopt lower flow rate standard than 2.5 gpm @ 80 psig.
- Study supports the EPA WaterSense® specification to give manufacturers time to design better showerheads.
- Annual savings from new standards and labels are estimated at 64,605 million gallons of water, 188 million therms, 3,066 GWh, and $600 million.

ACEEE
American Council for an Energy-Efficient Economy

Thank you for your attention